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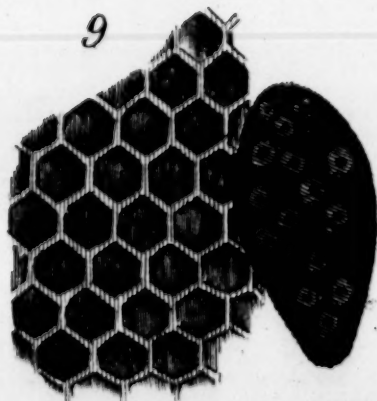
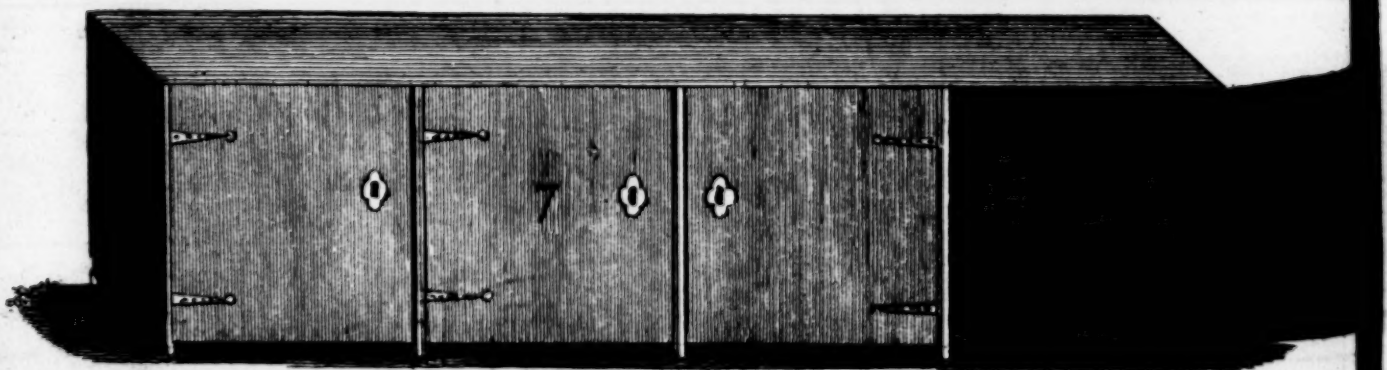
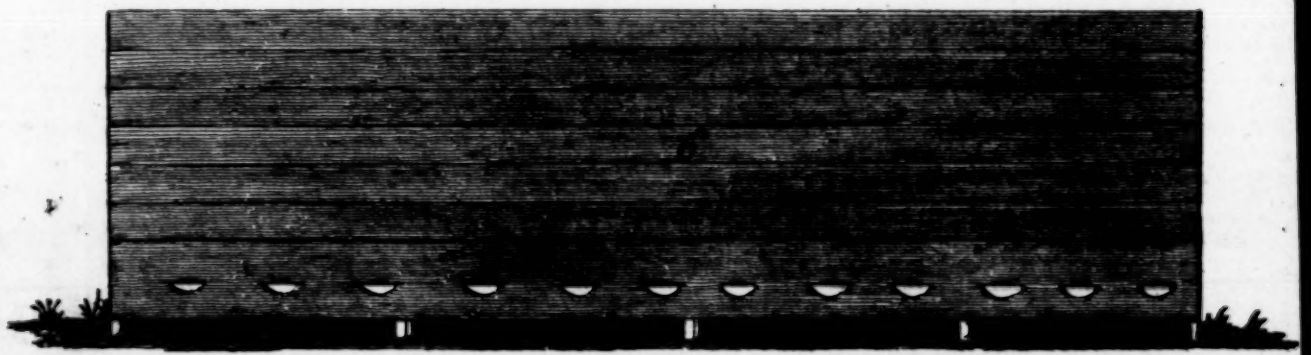
Containing an Essay on the

MANAGEMENT OF BEES.

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THE
Experienced BEE-KEEPER,
CONTAINING
AN ESSAY
ON THE
MANAGEMENT OF BEES:

Wherein is shewn,

FROM LONG PRACTICE,

The most easy and profitable METHOD of treating
those useful INSECTS.

With many OBSERVATIONS and EXPERIMENTS
entirely new; particularly interesting to the
Keepers of BEES, and useful to every Family.

Together with

An improved Method of making MEAD, and
a great Variety of other WINES, with HONEY.

—— *aërii mellis cœlestia dona*
Excquar.

VIRG. GEORG.

LONDON,
PRINTED FOR CHARLES DILLY.

M.DCC.LXXXIII.



THE
Experienced BEKKER

CONTAINING

A NEW

MANAGEMENT OF THE

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An improved method of making

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T O

THE RIGHT REVEREND

The LORD BISHOP of

D R O M O R E.

MY LORD,

THE many obligations conferred on me by your Lordship, I shall ever remember with pleasure and gratitude: they have done me so much honour in having received them, that for me to enumerate them here would have the appearance of vanity.

The following short Treatise, on the Management of Bees, I have been induced to present to your Lordship's protection, from the approbation you were pleased to

expres of my method of preserving the
 lives of these industrious little labourers,
 and well knowing how ready your Lord-
 ship is to afford your patronage to any
 thing that is in the least likely to be of
 benefit and advantage to mankind. At
 the same time, I am very sensible that I
 offer nothing new to your Lordship's pene-
 tration, even on this subject; but am happy
 to catch every opportunity to declare, that
 I am,

Your Lordship's

most obliged,

and most obedient,

humble servant,

BRYAN-I'ANSON BROMWICH.

A D.

ADVERTISEMENT.

AFTER so many ingenious and learned men have furnished the world with their observations on Bees, an additional Treatise may appear unnecessary; yet as the following pages were the consequence of a series of real experiments, many useful remarks will be found in them unnoticed by others who have written on the same subject. And as a considerable increase of honey and wax, in our own country, is confessedly of some importance, not only in regard to the private emolument of individuals, but also to the nation in general (as lessening the importation of these articles), whatever experiments therefore tend to promote the facility or cheapness of ordering this part of husbandry, I flatter myself, will not be thought totally undeserving some attention from the public.

And notwithstanding the many ingenious tracts, which have been written on the oeconomy and ordering of Bees (and to which I acknowledge myself greatly indebted), wherein the usual method of destroying these industrious little insects is universally condemned, and many have been the

schemes suggested to prevent it, yet still we see it continues the general practice. And thus it will ever continue, till a method is proposed, at least equally profitable, easy, and attended with no more expence to the proprietor.

The following little Treatise, therefore, which is founded on actual experience and long observation, is meant to obviate this uselefs, unprofitable, and cruel custom, by pointing out a way, greatly superior in point of profit, simplicity, and cheapness of management, than any method ever yet recommended; and which will clearly show, that the common barbarous mode of destroying these profitable little labourers, is also a great loss to the owners themselves.

What has chiefly deterred people from putting those methods in practice, already proposed for this desirable end, is, that however plausible they may appear, yet they are too complicated and expensive ever to be adopted for general use. They may indeed amuse the rich, and be of service to the naturalist; but are entirely uselefs to those who wish to profit by them.

Another objection to the many ingenious methods recommended in the Treatises that have been written on this subject, is, that Truth (so necessary to be adhered to in writings of this sort) is often blended with fiction; and this for want of practical knowledge in those who have taken their accounts from others; so much so, that, was one to sit down merely to confute all the absurdities that have been written

written in regard to the management of Bees, it would alone compose a considerable volume. Most books therefore on this subject (quite contrary to the laudable motive which dictated them) have rather discouraged than assisted this branch of rural economy.

On the contrary, these observations, which I now submit to the impartial judgement of the public, though they recommend a process greatly superior in point of profit, yet nevertheless it will be found to be attended with much less trouble and expence, than even the keeping Bees in common straw hives. I may add too, that truth has guided my pen; nothing is asserted in them but what has been repeatedly tried, and drawn from actual experiment.

In the directions given for the making of Mead, I have endeavoured to ascertain the exact quantity of honey, with the degree of fermentation, necessary to give it the greatest strength, with the most agreeable flavor possible. In respect to the other wines to be made with honey, I have only to add, that, although they may readily be distinguished by a nice taste from those wines they are said to imitate, yet they may be equally as pleasing to many people; and as they afford an agreeable variety, each one may choose what suits his fancy. And perhaps the few experiments I have made may be the means of further discoveries and improvements in this necessary and useful article.

In regard to the language of the following pages, the author is sensible he stands in need of much indulgence

dulgence from literary gentlemen (if any such should ever honour his work with a perusal); and he flatters himself they will in some measure grant it, when they consider it not meant as an effort of genius (which the author claims no pretensions to), but merely a work of use, and to be adapted to the capacities of many who read but little.

— *et apes examina conduit*
Corticibusque cavis, vitiosaque siliis alveo.

VIRG. GEOR.

First Bees in rocks their habitations sought,
 Or hollow trees their wondrous structures wrought;
 'Till man a more commodious mansion gave,
 And call'd them from the woods, and dreary cave.
 Invited thus to neat and ready bowers,
 They cull the choicest of the vernal flowers;
 Survey th' enamel'd plains on rapid wing,
 Range o'er the lawns, and rifle all the spring:
 Succeeding blooms their arduous toils renew,
 To steal the sweets, and sip the nectar'd dew.

Scarce has the sun loos'd hoary Winter's chains,
 And rays benign o'erspread the verdant plains;
 Scarce do the early flowers of April blow,
 And genial sun-beams melt the drifted snow;
 When forth abroad the busy wand'ers fly,
 Nor lose a moment of a fav'ring sky.
 When Flora's sweets by Nature's bounteous hand
 Are pour'd more amply o'er o'er th' enliven'd land;
 When painted blossoms scent the verdant air;
 When woods and lawns their loveliest mantles wear;
 How joyous then o'er flow'ry banks they rove,
 Or, led by fragrant bloom, they search the grove!

Now

Now in the vale, where mingled rays diffuse
 Their lively tints in various spangled hues,
 On rapid wing, they glide along the gale,
 And harmless wander o'er th' impurpled dale.

As in a city various *artists* live,
 By various works assistance mutual give;
 Thus different Bees this insect-state adorn,
 Some native artists, some to arms are born.
 Rul'd by a Queen with all the pride of state,
 A numerous guard around their monarch wait,
 No prostrate Eastern slaves can ever more
 Their prince through fear, than these through love adore.
 Some from the busy hive explore the way,
 In search of sweets, and all the blooms of May;
 Others the wax in various hues collect,
 Part build the comb, and some the works inspect.
 What skilful artist better knows to trace
 Such cells complete within a given space?
 The young, no sooner hatch'd, impatient try,
 Their unus'd wings in air, and boldly fly,
 O'er groves and meads for fragrant treasures roam,
 And instinct guides the little wanderers home.
 If lurking robbers ever should by stealth
 An entrance gain, to rob them of their wealth,
 Quick through the hive, like trumpet's harsh alarms,
 The danger's told, and all rush forth to arms;
 Prepare for vengeance, spread their little wings,
 "And fit their *claws*, and point their angry stings."

Yet, ah! in vain they guard th' ambrosial gains,
 Whilst man, tyrannic lord! their rage disdains!
 Ill-fated race! condemn'd, alas! to be
 The victims of your matchless industry!
 Ah! leave them happy in their copious store,
 A part they'll give; and why desire ye more?

And

And must ye kill?—Mistaken thought—ah, shame!
 No more involve them in sulphureous flame.
 The tender race, whom works of peace employ;
 Busy'd in public cares, and full of joy!
 Was it for this they sought the roseate bowers,
 With ceaseless labour toil'd on spangled flowers?
 For this they bore the summer's sultry ray,
 And autumn's sunny gleam; nor lost a day?
 Ah! cruel man! the sulphur'd matches spare,
 And be content the nectar'd sweets to share!
 In just return, the happy race reward;
 From chilling winds the peaceful mansion guard:
 Regale them too, upon some smiling day;
 Thy tender cares they amply will repay.

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DESCRIPTION

OF

B E E S.

Of the Queen Bee.*

THERE are three sorts of Bees distinguished in every Hive: viz. The Queen; or Female Bee; the Drone, or Male; and the common working Bee.

The Queen is very different from the rest both in shape and colour; her body is longer than the Drone, neater made, and tapers to a point. She has very short wings in proportion to her size, and her belly and legs are of a brighter yellow, than the other Bees. Like the common working Bee, she is armed with a sting, but never makes use of it unless greatly irritated. Without a Queen the

* See the Plate, Fig. I.

Bees can never prosper, as she alone is the Breeder * ; and there is seldom more than one of these in a hive, at the same time, except in the breeding season. If two swarms are purposely united, one Queen is always sacrificed to the peace of the hive. But this is not always the consequence, as hath generally been believed when stocks accidentally unite themselves ; or when they are kept in Colonies, that is, raised boxes. In proof of this assertion, I will relate a circumstance that happened in my own apiary.

In the winter of 1777, I had three single Straw-hives of Bees, standing separately, in an inclosed shed ; these happened to be blown down by a violent wind ; the weather being frosty, and very cold, prevented the Bees from flying much abroad, but from the position in which they fell, they all accidentally united themselves into one hive, without even the loss of one Bee that I could perceive.

* Some writers, on this subject, affirm to the contrary ; and fancy the working Bees equally breeders. But these assertions are manifestly absurd, and contradictory to the observations of the best Naturalists. When the Queen Bees are dissected, there is always found in them an *Ovaria* replete with a multitude of eggs, somewhat for number like roe of a fish ; but never any thing similar to an *Ovaria* was ever found in any other sort of the Bees which compose the hive. If the common working Bees bred equally with the Queen, what use then can we suppose the Queen to be of, or why should they not be able to exist without one ? It is notorious that if the Queen dies, unless replaced with another, the hive, or colony, is soon annihilated ; the Bees being sensible, by an uncommon Instinct they possess, that without her their generation ceases. *Wasps*, *Hornets*, *Humble-Bees*, are also bred from one Mother, or Queen ; and they alone, amongst these last, survive the winter ; and if one of them is killed in April or May, a whole nest is destroyed.

I had

I had the curiosity to examine this hive afterwards, and saw the three Queens living, to appearance, very amicably together. I immediately raised them on a large *flat-topped* hive, in order to give them room, thinking that the most likely method to promote their friendship. This proceeding has answered beyond my most sanguine expectation; having continued to take from them, every summer since, one or two hives, well filled; in short, it has more than doubled the profits, had they continued as they were. Had I not raised this hive, I make no doubt but that two of the Queens would have been killed, as soon as the weather became milder, and the breeding season commenced; but that not one of them was killed is evident from their great increase afterwards, and which one Queen could not support, or any thing equal to their numbers *.

It appears evident to me, that it is only for want of room, that the Bees dispatch their supernumerary Queens. In support of this opinion, I observe it often happens, that two Queens, when the lead swarms from a hive, at the same time, generally settle together without the least commotion. Now it is well known that Bees always provide themselves an habitation before they leave

* Since the above was written, I have proved it beyond a doubt, that more than one Queen Bee will live in the same colony, or raised boxes, by the many experiments I have made, of dividing collateral boxes to increase their number: for which directions are given in the latter part of this treatise.

their old hive, and that it is only from the Queen's being unable to fly far at a time, that they so often alight on the branches of those trees that grow near them. It may reasonably be supposed, therefore, that as they swarm together, without the least disturbance, and both of them very amicably alight on the same branch, that they are both likewise destined to the same place, and that the place they have provided is sufficiently large. It is only then after they are hived, that, finding the habitation too small for the offspring of both Queens, hostilities commence, and one is sacrificed to the welfare of the Colony.

The attachment of Bees to their Queen is very wonderful ; be but possessed of her, and you may lead them where you please. If by any accident she dies ; the others immediately cease to work, and only consume what stores they have, and perish. However, this attachment is by no means constant to any one particular Queen ; for if a hive, which has lost its own, can by any means be provided with another, the same attachment to her will be observed as to the former : Order and regularity will be immediately established, and they will resume their labors with all their former activity and diligence.

It is remarkable that when you are possessed of the Queen from any hive, the rest become more gentle, and seldom make use of their stings.

The Queen Bee scarce ever leaves a hive, unless when she leads a swarm.

The

The *ovaria* of a Queen Bee contains some Thousands of eggs, somewhat similar to the roe of a fish. The great naturalist, Swammerdam, relates that he discovered in the *ovaria* of one Queen, ready to lay, five thousand one hundred visible eggs.

It is commonly supposed that she lays nearly two hundred eggs every day, in the height of the breeding season *. She sometimes begins laying so early as the latter end of January, but this depends entirely on the forwardness of the season. The most certain rule to know this is, that whenever the Bees are observed to collect from the early flowers, it is then a sure indication of the Queen's breeding, and beginning to lay her eggs.

* I have been assured by the most respectable authority, that the first Mr. Wildman, who shewed experiments on Bees (for his namesake, who now keeps a shop in Holbourn, was not the original Discoverer of the method of handling Bees, or that published the quarto volume concerning them by subscription), having doubted whether all the young ones bred in a hive proceeded from the Queen Bee, made the following experiment. He caught a Queen, and tied her by a thread so that she could not wander but a few inches; he found notwithstanding eggs soon afterwards deposited in cells to which she could not reach: this seemed decisive against the one mother Bee. But a day or two after more narrowly observing what passed in the hive, he saw the working Bees carrying the eggs from the said mother, or Queen Bee, and depositing them for her in the distant cells. This curious fact is recommended to the notice of such Bee-masters, as have a facility in catching the Queen at pleasure.

Of the Drone or Male Bee *.

The *Drone* or *Male bee* is very unlike any of the others, from which he may easily be distinguished: he is somewhat shorter in general, than the *Queen*; though of a thicker and clumsier make. He is covered with a sort of down at the nether end, and is considerably larger than the common working *Bee*; and whenever he flies, he makes a rougher and deeper sound. The *Drones*, however, are not all of one size, for some of them are much smaller than others; they are not like the others, armed with a sting, therefore may be handled without fear. Five or six hundred, or more, are often bred in one hive; they are not formed to collect either honey, or wax, but feast on the labors of the rest; leading a luxurious life of idleness and love. But their pleasures with their lives are very short; for as they seldom appear before the middle of *May*, so they are generally destroyed, or expelled the hive, by the other *Bees*, before the month of *August*, if the hive is strong. At this time, the breeding season being partly over, a most cruel war is commenced against them; for as they contribute nothing to the winter stores, by their industry, therefore, when they

* See the Plate.

are no longer of any use, they are all destroyed: Even the young brood are dragged from their cells, and every vestige of Drone is totally annihilated.

In weak hives they are suffered to live longer, and the reason is, not that the other Bees are not able to drive them out, but that they find them necessary in hatching the young brood, to which their additional warmth greatly contributes, being themselves but few in number. Therefore the custom of killing Drones, when they are observed to remain later than common, and which some practise, thinking the other Bees are not able to do it, is highly prejudicial to the prosperity of a hive.

A most singular circumstance attending the generation of Bees, is, that although there are so many males to one female, and they have been observed to couple like other insects*; yet that this should be to impregnate the *ovaria* for a future, not that present season, is exceedingly remarkable. In order to prove this, we need only observe that Bees begin to breed so early as the month of *February*, sometimes sooner, and the Drones are seldom seen before the beginning of *May*, and are always destroyed before the following winter commences. In short, there is no *Drone* hatched before the latter end of *April* or the beginning of *May*.

* See M. de Rëaumur on Bees.

When the Drones first appear, in the spring, swarms, from the single hives, may then soon be expected, if the weather be favourable. They seldom appear before *eleven* in the *morning*, and very few are ever seen after *six* in the *evening*. An exception to this rule is, when the bees are going to swarm, which they sometimes do, in very hot, sultry weather, so early as eight o'clock in the morning, though very seldom; and part of the Drones always attend the swarms.

Those hives that have the greatest number of Drones generally turn out the most swarms: it shows they are possessed of the most prolific Queens. Those in which are found no Drones at all should either be immediately taken, or else united with some other stocks; for this circumstance shows that the Bees have lost their Queen, or else she is a barren one: in either case the Bees can never prosper. Whatever may have been said, that Bees have been known to prosper without any Drones appearing; this for certain may be depended on, that those hives which breed no Drones, breed no other sort of Bees.



Of the Working Bee *.

The *Working Bees* are much less in size than the Queen, or Drone; they are armed with a sting, and are soon irritated to make use of it. They may, with some propriety, be called Mules, being of neither sex. These are the only labourers, and of this sort the hive or colony chiefly consists. The working Bees collect all the wax and honey, build the combs, guard the hive, &c. and are ever ready to sacrifice their lives for the general good. And from all the observations I could ever make, there appears, also of These, a variety of species in every hive. Some seem to be formed to collect the honey, whilst others search the flowers for wax only; others again, I observe, never leave the hive, but seem as if constantly employed in the various works within; such as building the comb, disburdening those that return from the fields, feeding the young brood, and guarding their treasures, &c. In short, they seem to be endued with a peculiar instinct, directing each one its different task; and that without a sufficient number of these, in each department, no colony will prosper.

It has been thought that Bees, all the winter months, are in a state of sleep, and inactivity; but this is very erroneous: They are then equally alive and active within the hive; and consume nearly

* See Plate.

as much provision as they do in summer; except in very cold and severe weather. Consequently the more severe the winter proves, the greater quantity of stores remain with the Bees in spring.

If any accident destroys the Mother, or Queen, the rest immediately cease to labour, and only live whilst their stores remain; unless there is a prospect of a young one's being soon hatched, or another can be given them from some other hive. But as the giving them one from another hive will be attended with great trouble and difficulty, I would advise, when such accident happens, always to unite them with some weak hive. The method of doing which will be found in the *directions* given for uniting swarms.

Although every good swarm is composed of many thousands of Bees, commonly between forty and fifty-thousand, yet such is their peculiar instinct, that a single Bee of any other hive shall not obtrude himself, but he is instantly known, and seized on as a robber.

Bees have, if I may be allowed the expression, a sort of language amongst themselves, whereby they know each other's wants. This will be easily known to the most superficial observer, by giving the least attention to them, in building their combs, unloading the labourers, feeding each other, &c. They also foreknow storms; and will sound an alarm, when any thing injurious approaches their habitation; and such sounds will be instantly understood, and answered by the whole hive. But
not

not one of the least instances of their sagacity is, a day or two before they swarm the second or third time, when it should seem as if a sort of Council were held, night and morning, debating whether it will be for the general good that any more should emigrate. If there are Bees sufficient in the hive, to spare so many as will compose the cast, leave then is given to the young Queen by the old one to lead a second or third swarm. This may readily be known by her descending to the bottom of the hive, and summoning her new subjects by repeated calls, in a louder and more shrill tone than what was used before. The next day the cast or second swarm, &c. may be expected, if the weather be favourable. If leave is not obtained by the young Queen, she is then sacrificed to the peace of the commonwealth.

Of the Wax, and Combs.

It is believed that the *Combs* are formed from a powder, collected from the *Stamina of Flowers*; which also serves them for a part of their *food*. The Bees collect it into little balls, with which they load their legs. Before this crude wax, or farina, is used for building combs, it is digested in the body of the Bee, and this brings it to a proper consistency for their purpose.

This *Farina* is also called *Bee-Bread*; and that the Bees feed upon it, we need only observe that
large

large quantities are collected and laid up, in every hive, where wax is not wanted. The substance is digested in the body of the Bee, before it becomes wax; and in proof of this assertion, we know that new combs, before they are filled with honey, or young brood, are of a clear white colour, whereas the farina, or crude wax, is of various colours, according to the flowers from whence it is brought.

The manner in which these little insects construct their combs, is worthy observation. By the *hexagonal* form of the cells, they lose no room, as the circumference of one makes a part of the circumference of another; which was it contrived in any other shape, there could not be so many cells, of equal capaciousness, in the same given space. These cells, which are very thin, are strengthened at the entrance by a fillet of wax, and also at the bottom by the angle of one admirable falling in the middle of its opposite.

There are different sorts of combs in every hive, made according to the species of Bees which are to be bred in them. In those combs constructed for breeding the Drones, the cells are considerably larger than those which are intended for the working Bees; and those cells which are made for breeding the Females or Queens, are of a very peculiar form, and fashioned with a deal of labour*.

It is very remarkable, the wonderful instinct peculiar to the Mother Bee, in being able to distinguish the sort of egg (out of the great number the

* See the Plate.

ovaria is composed of) she is going to deposit, and to chuse one of these cells accordingly.

There is another kind of wax, which Bees collect, called *propolis*. This is a sort of *resin*, not gathered as wax is, from the *stamina* of flowers, but from the *rind*, and the *leaves* of *trees*, *shrubs*, &c. Its colour is of a reddish brown, and becomes harder than wax. The Bees use it to close every crevice in their hives, and to fasten the hives, or boxes, to the board they rest on. In regard to this particular, smooth boxes, or hives made of wood, are greatly to be preferred to straw-hives; the boxes save the Bees an immense deal of labour which the straw-hives require; as they smooth the whole inside of them with *propolis*. And was the inside of the boxes themselves rubbed over with wax, in order to stop every crevice, before the Bees were put in, it would greatly forward their works.

Of the Honey.

Bees collect most of their honey, as well as wax, from flowers; a part is also got from what is commonly called honey-dews. This *Honey-dew*, that is found on the leaves of trees, is nothing more than a sweet juice which exudes from the leaves. If this juice fell, as it is vulgarly supposed, from the open air, it would then cover the leaves of any tree in its way, promiscuously, which never happens; we see it only on part of the leaves of some particular trees, and

never but on one side *. As Honey-dews never happen but in very hot sultry weather, *heat* therefore in all probability is the cause of them.

The goodness of honey entirely depends on the situation in which the Bees are placed; great quantities may be collected from *Commons of Heath*, or *Fields of Buck-wheat*; but what is got in these situations is always of a very deep colour, and not well flavoured. The best and finest coloured honey is collected from *flowers*. The *mignonettes* produce the most fragrant of any I am acquainted with in this country, and in the greatest quantity; their flowers continuing in bloom all the *summer* and *autumn*.

In the year 1779, I made the following experiment: observing Bees to be particularly fond of the flowers of *mignonette*, I therefore planted a large quantity of it before two hives, at a considerable distance from any other Bees. Having, plenty of this provision so near them, very few ever left the garden; and these probably for water, which Bees often have recourse to, in dry weather. In *September*, the same year, I took the honey, and found a greater produce, by one-third and upwards, than from any two of my best hives, where the Bees were obliged to fly abroad; and this equal, both in fragrance and colour, to any imported from the warmer climates.

* The Oak is the principal tree which produces the Honey-dew in any quantity; it is often found on the Maple, Sycamore, Hazel, and Bramble, and also on Hop-plants.

There are two sorts of *mignonette plants*, the one is *annual* and sweet-scented, the other *perennial*; both equally beneficial to Bees. They continue in bloom till destroyed by frosts, and afford both honey and farina the whole season.

Honey is not, like the wax, made by the Bees, but only collected by them: they collect it by suction, and afterwards convey it to the cells, which when filled are closed with a very thin covering of wax. There are indeed two sorts of honey, which the Bees make use of: that which they live upon in summer is of a more fluid, watery substance, than that which is collected for their winter provision. The cells which contain the former of these are always left open; their winter stores, on the contrary, are secured with great care, and are never touched till the honey-gathering season is over, and the cold weather commences.

Of the Situation of Bees.

The best situation for Bees is facing the *south*, rather inclining to the *west*; it being better for them to have the *evening*, than the *morning sun*. Full *east* or *north* should always be avoided. Bees are not able to see but in a clear light; when therefore they return late in an evening, and are placed either *north* or *east*, they would often, in that situation, not be able easily to find their way into the hive; and when they return home heavily loaded,
and

and miss the entrance of their habitation, they generally fall upon the ground, which, if either wet or cold, chills them so much, that they are seldom ever able to rise again; which consequently must occasion a daily loss.

For the same reason, the nearer Bees are placed to the ground the better; five or six inches from it is quite sufficient to secure them from the easy access of vermin; they should by no means ever be placed in a higher situation, which, however injudicious, has often been recommended.

No *weeds*, &c. should ever be permitted to grow near them, as they not only harbour *vermin*, but also occasion the loss of many Bees, when they happen to fall among them in wet weather. If loose sand is spread pretty thick before them, it will be found very convenient, both in obstructing the growth of weeds, and also a drain for the wet.

It is very proper that the Bee Garden should be furnished with those plants, herbs, &c. that yield the Bees plenty of food; such as *Gooseberry* and all kinds of *fruit trees*; *Spanish Broom*, *Mignonette*, *Thyme*, *Borage*, and *Tobacco-plants*: also *fields of Turnips*, *Buck-wheat*, or *Dutch-clover*, in bloom, are what they collect from in great quantities.

Those shrubs and flowers which bloom early in the year, will be found particularly useful in or near the Bee-garden; such as the *yellow winter Aconite*, the *Crocus* and *Snow-drop*; but more especially hedges of the *Sallows*. On the *Farina of the Sallows* (which comes early and in great abun-

abundance), the Bees nourish the young brood, and nothing will produce forward swarms so much as plenty of this food. *Raspberry* and *Blackberry Blossoms* also afford considerable quantities of this nutriment, though later in the year.

The *Apiary* being situated near *Oak*, or *Horse-Chesnut Trees*, is also very beneficial to the Bees: The *Oak* most frequently producing the honeydews, and the *Chesnut Trees* afford great quantities of bloom.

Bees collect too a considerable share of honey and farina from the blossoms of *Ivy*; and this, I believe, excepting the *mignonette*, and what is commonly called the *Bee Flower* *, is the latest bloom they gather from.

The *Apiary* should be sheltered as much as possible from the *north* and *eastern winds*; and if placed near the dwelling-house, will save much attendance in swarming-time.

The *floors* for the hives should always be made of smooth light board, and never of stone; this last becoming so intensely cold in winter, that it is almost certain destruction to every Bee that happens to alight on it.

Of their swarming.

In the spring, when a hive becomes crouded by the young brood, if it is not soon raised on an

* This flower is not very common; and the author is probably unacquainted with its true name.

empty one, part of them will seek for a new habitation. As soon therefore as a young Queen is hatched, and becomes fit to fly, she then only waits for the first fine morning to lead the young colony to its new abode. They should therefore be watched from the beginning of *May* to the middle of *July*.

Sometimes it happens that two or three *Queens* lead a swarm, and this is generally the case when the Bees settle in so many separate clusters; but as soon as they are put into a hive, only one is suffered to remain there; the others are always destroyed, with many of their attendants, which never forsake them.

When Bees swarm, they generally alight on some branch of a tree or hedge near the place they came from: for this reason it will be very convenient to have a few trees planted about the apiary, or they may be induced to fly so far before they can find a convenient place to alight as to be lost to the proprietor.

When the swarm is to be put into a *straw hive*, be careful that all the loose straws in the inside are singed off; and this will also destroy any *young brood of moths* which may have harboured there: let it be afterwards rubbed with a coarse cloth, and it will save the Bees a deal of labour in clearing it themselves. Let the hive also be rubbed with a *bunch of Beaum*, dipped in a mixture of *brown sugar* dissolved in beer; this being agreeable to their taste, will induce them not to forsake the habita-

habitation you have provided ; which often happens when they take any dislike to it.

The swarm when hived must not be carried immediately where it is to remain, but must be placed on a cloth on the ground, first laying a stick or two on the cloth, for the hive to rest on, and in order to give the Bees free entrance. In the evening when the Bees are all in the hive, and not before, it may be carried where it is to remain. The hive containing the swarm should be well shaded whilst it remains on the ground, with the boughs of trees, &c. lest the too powerful heat of the sun should offend them, and cause them to rise a second time. If the weather is not likely to be favourable, put under the new swarm a plate or shallow dish of honey, covered over with bits of straw, or with a piece of paper pricked full of holes : or strew under the hive some brown sugar moistened with beer ; this will serve them to feed upon till they can get abroad to work. Previous to hiving the swarm, a small stick or two should be run across, in a contrary direction to the mouth or entrance of the hive, to secure the combs from falling.

It is a common practice with country people to ring a bell, or pan, when their Bees swarm ; fancying the noise hinders them from flying far, and causes them to settle sooner. I cannot say I ever found that this makes the least difference ; for if the Queen who leads them is strong and able to fly far, it is not any noise that will retard her flight.

flight. In one respect the ringing to Bees may be of use ; it ascertains your property, in claiming your swarms, when they happen to alight in your neighbour's premises.

It is necessary all the swarming season, that Bees should be continually watched, from eight o'clock in the morning till after four in the evening : for although it is seldom they rise so early as eight, yet in very hot weather I have had swarms rise even before that hour ; and casts, or second swarms, often come out of the hive so late as four or five in the evening. If Bees are not continually watched all the season, in a large apiary, many swarms must unavoidably be lost ; for if the branch they happen to alight on be much exposed to the sun, it will cause them to leave their situation in a few minutes ; it is very necessary therefore always to be provided with hives, boxes, &c. ready prepared, according to the above directions, all the swarming season.

It is unnecessary to give directions for the hiving of Bees, or shaking them from the bough into the hive, it being an operation so universally known in every village throughout the kingdom. I shall only observe, that the person who performs it should secure himself as much as possible against the stings. The best dress I can recommend is, a carter's round frock, with a pair of stout gloves, and two pair of stockings. The face should be fortified with a small meshed net, to be thrown over the hat, or some other thin cloth that can be
 4 seen

seen through. Many people use no precautions whatsoever, and indeed Bees at this time are seldom apt to sting.

No sooner is the swarm settled in the hive, but the Bees fall to work in making combs, and in a few hours time will have finished one or two of considerable magnitude. This is a clear proof that they digest the farina, or crude wax, in their stomachs, before they use it to form their cells; for commonly a large comb is constructed before a single Bee, in the new swarm, will offer to fly abroad. A few of them, indeed, that are just returned from the fields, previous to the swarms issuing forth, may be seen to have some farina attached to their legs, but inconsiderable in proportion to the combs they make, before they collect any, after they are hived.

The new swarms usually build more comb, in the first fortnight after they are hived, than they do the whole succeeding summer; and this industry is excited not so much for cells to place their stores in, as for their Queen to deposite her eggs.

It often happens that Bees, in swarming-time, hang out of the hive in large clusters; either the hive being too small to contain their numbers, or else the extreme heat of the weather makes it too warm for them to stay within. In either case it is a sure indication of their being crouded, and of their wanting to swarm; and that they only wait for a leader to conduct them. I would always advise, when this happens, if they should not rise

within a day or two, to raise them immediately on a flat-topped hive; by this means the super-numerary Bees will have room to work, who otherwise only waste their time, and live on the labours of the rest; and if it should be late in the summer before a young Queen is produced, and fit to lead them, they then lose the best part of the year, and will scarce have time to fill their own hive sufficiently to subsist on through the winter, besides greatly impoverishing the old stock. Whereas, by the method I have now suggested, they will be hindered from swarming at all, unless they should rise a few days after they are raised *. You will by this means, instead of two weak stocks, often get a double hive, well filled with wax and honey, and which I have frequently experienced.

A great deal has been written on the subject of making Bees swarm artificially, when they are observed thus to hang from the mouth or entrance; but I can assure my readers, from repeated trials, that they are all of them very uncertain and troublesome experiments. Raising them, as above, is the only certain method of treating them with any success.

Many people have imagined they can tell when Bees are going to swarm by a peculiar noise the females make at that time; but this only happens

* If a young Queen is in great forwardness, raising them, in that case, will not prevent their swarming. Neither will it if the entrance of the upper hive be left open; they must have a passage at the lowest hive only, if you wish the Bees to take to it.

before

before a cast, or second swarm, and never before the first. These Calls (as they are commonly styled) may be heard very distinctly two or three days before the cast rises, particularly in the evenings; and when you listen to them, it seems as if the Queens were in debate, and answering each other. These noises or calls were made by the *Queens only*, and by them you may distinguish how many there are, at that time, in the hive, each sound being very different. The casts usually happen the ninth day after the first swarm, if bad weather does not prevent them coming out.

EXPLANATION OF THE PLATE.

Fig.

1. Represents the Queen, or Female Bee.
2. The working Bee.
3. The Drone, or Male Bee.
4. The Deal Box, 9 inches square, and 8 inches in height *.
5. Ditto with small Glass Hives at top †.
6. Front of the Bee-House, 13 feet long, and 4 in height.
7. The back part of Ditto, with 4 doors; one of which is open, shewing three colonies, or rows of boxes.
8. The side, 14 inches in breadth.
9. Represents the Cell of a Queen Bee, attached to a comb.
10. Represents the manner in which Bees usually hang to the Bough of a Tree, when they swarm.

* I would recommend a strict attention to the exact size of the Boxes here mentioned: even the variation of half an inch, will be found to cause a material difference in regard to the future success in using them.

† This is meant for the convenience of taking small quantities of pure unmixed virgin Honey at any time or hour of the day throughout the Summer. See page 51.



Of the Bee-House and Boxes.

*Description of a new invented Bee-House
with Boxes *.*

When Bees are to be raised, in order to partake of their wax, and honey, without destroying them, it is absolutely necessary that they should be kept in a house or shed. This that I am going to describe, is, I believe, formed on the plainest, and most simple plan that can be contrived, and also the cheapest.

A house to contain twelve colonies must be made of the following dimensions. The length must be thirteen feet: the height, in front, four; that is, four feet from the bottom board, or that on which the boxes are to be placed. The breadth of the sides or ends of the house do not require more space than fourteen inches. The back part is composed of four doors, to open from end to end; three feet and a half in height, from the roof to the bottom board †. This house, or shed, may be made with common half-inch deal boards, which, when well painted, will be equally as

* See the plate.

† In a secure and sheltered situation the doors to the house may be omitted, and thereby nearly the expence of making it will be saved.

durable

durable as any other wood : the whole expence of this construction need not amount to more than 30 shillings.

An inch deal board very smooth and even must be placed in the inside from end to end, about twelve inches broad, for the boxes to rest on. Exactly even with this bottom board, twelve holes must be cut to correspond with the mouths, or entrance holes of the boxes ; which should be four inches wide, and half one in height. Underneath each of these holes, on the outside of the front, small pieces of boards are fastened in a declining position ; as well for the greater ease for the Bees to alight on, as to drain off the wet. It will be proper also to paint each of these alight in boards of different colours, and also round the mouth of each entrance, in order to prevent, as much as possible, the Bees mistaking one box for another.

A house thus constructed, of little more than three yards in length, will be found to contain twelve colonies ; which will be found equal to twenty-four hives, with all their swarms, kept in the usual way.

The boxes, which are to contain the Bees, I recommend to be made of well seasoned inch-deal-board, it being the lightest and warmest wood. Let them be made nine inches square, and eight in height, in the inside ; with a communication-hole at top of about three inches*. The mouth

* In order to save the Bees trouble, and retard their labors as little as possible, four smaller holes of about an inch may be cut round the middle one. See plate, Num. 4.

or entrance should be four inches wide, and only half one in height, the better to preserve the Bees from *mice*, *snails*, &c. These boxes should be well made, and the work closely joined together; so constructed, they will be equally as warm, more convenient, and much cheaper in the end, than any thing of the kind that can be made with straw.

Those persons who are curious to observe what progress the Bees make in their works, may insert, in the back part of the boxes, small panes of clear glass, with covers of *tin*, *wood*, &c. to be opened or shut occasionally. At the same time it must be observed, that these covers, or doors, should never be left open long together, or it will greatly interrupt their labors.

Bees in Colonies.

Of ordering Bees in Colonies, with an easy method of taking the Wax and Honey, without destroying them.

When the house and boxes are prepared, let them be furnished with strong and early swarms; never with late or second swarms, these seldom answering the purpose of raising a stock. And when a swarm is to be put into the house, it is
neces-

necessary, from the smallness of the boxes, to place that box which contains the Bees immediately on an empty one, lest they should leave it for want of room; one of these boxes alone being scarce large enough for a good swarm.

If the swarm is strong, and produced early in the season, both these boxes will be filled with combs in a few weeks. When this is perceived, let a third be immediately added underneath. By this means the combs in the upper box will, in a little time, be free from the young brood, and be intirely appropriated for honey: for it is natural for the female Bee, as soon as the boxes are raised to descend, and lay all or most of her eggs, in the lower boxes, as being nearer the entrance. So that when the young, in the upper box, have emerged from their cells, those combs are bred in no more, but are immediately filled with honey or crude-wax. For this reason the honey got from Bees, by means of boxes, is in a far purer state than that procured in the common method; where considerable quantities of the young brood must unavoidably be mixt with it.

Whenever there is reason to suspect that the upper box is filled with honey, without any of the brood (and which is generally the case when the lowest or third box is filled with combs), it may then with success, and not before, be taken off. To do which, let a person who takes it go early in the morning before sun-rise, prepared with a thin pliable knife, the blade of which should be
seven

seven or eight inches long, in order to cut through the combs that are attached to the second box: when this is done, let him gently lift it off, at the same time laying a small board to stop up the communication hole, and keep the bees from flying out of the lower boxes. Let the box taken off be carried to some distance; and as there will always some Bees remain in it, turn the bottom uppermost, and for a minute or two keep rapping the sides of it with a small stick. This repeated noise will sometimes cause them to leave the box in a short time; but if they should not be readily got rid of this way, then one of the three following methods may be chosen, according to a person's situation or convenience.

The first is to plunge the whole box, and its contents, in a tub of water, placed in readiness for that purpose. Neither the wax or honey will be at all the worse for this operation, if done with a gentle hand, and not immersed too long; and the Bees will soon recover their drowning, if taken out and laid on a dry cloth in the sun*.

Another method, and by far the best, where it can be procured, is to, carry the box, as soon as taken, into a dark room, excepting a small window for the Bees to fly out at. Let the box, when

* It may happen that a Queen Bee is amongst her drowned subjects, therefore, after this operation, she should be sought for with a careful eye; and if found, returned to the colony from whence she was taken.

brought

brought into the room, be set from the window, with its bottom uppermost, as far as the place will admit; then keep rapping the sides, and the Bees will most of them take wing, and immediately make for the light. In this method the Bees will be got rid of sooner than by any other: for as they can see only in a clear light, none can return into the room. If a Queen Bee should be in the box, which sometimes happens, part of her attendants will never leave it whilst she remains. When therefore most of the Bees are gone, and it is found difficult to get rid of the rest; let the box be examined, and if a Queen is found, let her be carefully conveyed to the old stock. Whoever performs this business, should be well fortified against the stings; the best directions for which, see in the article of Bees swarming.

Another way, and which some may prefer, is stupifying the Bees, by burning in the box taken off a piece of the *Fungus maximus* *. Take a piece of the dried *Fungus*, as big as a hen's egg, and fix it on a stick at the bottom of an empty straw-hive, the bottom upwards; which when lighted, place over it the box taken from the colony: in order to keep in the fume, wrap a cloth round the intermediate space, betwixt the box and the hive. In a short time all the Bees will fall into the empty hive, but they will soon recover themselves when

* In order to prepare this substance for use, see the article of *Uniting swarms*.

exposed to the open air, and immediately join their companions.

It is necessary to observe that the upper box should not be taken away too early in the year : I have seldom succeeded before the latter end of June. If it is taken before the young brood are all gone, the honey is not only the worse for it, but the colony greatly weakened. Experience however will point out this much better than any written directions can do, as our seasons vary so considerably.

The same day the upper box is taken away, an empty one must be placed underneath ; and when this is filled with combs, the same operation may again be repeated. It seldom happens that two of these boxes may not be taken in a season, and often three. But it is to be observed that none ought to be taken after the first week in August.

When speaking above of taking two or three boxes from each colony, I would be understood of the second, or succeeding years. The first season, the Bees being so few in number, it often happens that even one cannot be taken with safety, unless the swarm be very early and strong. But in the second and third years, when the number of Bees are increased, generally two, and often three, may be taken, and yet leave sufficient provision for them in winter.

The above method of keeping and ordering of Bees will be found on trial far preferable, in every

every respect, to any other that hath yet been offered to the public. Those methods hitherto recommended, however ingenious, are more adapted for the amusement of people of fortune, than for use to those who wish to profit by them; the expence and trouble attending them being so very considerable, that few, unless for curiosity or amusement, could ever think of putting them in practice.

On the contrary, all the implements necessary in the method here recommended, are of so plain and simple construction, and so easily procured, that it is in the power of every cottager to be possessed of them, and even to make them all himself. The Bees also are so easily managed, that the keeping them this way will be found much less expensive and troublesome than in common straw hives; at the same time the profit will be doubled, the Bees being never destroyed. The honey too will be got in purer state; for with straw hives, the way Bees are usually kept, it is impossible to have the honey without a mixture of the young brood.

Advantages of keeping Bees in colonies, or boxes, compared with the common method of keeping them in single hives.

In speaking of the advantages, arising from this method of ordering Bees, it is not my design to amuse the inexperienced reader with vain and delusive expectations, but to relate facts only which have occurred in my experience; and which I shall endeavour to exhibit, at one view, by the following impartial calculations and comparisons. The emoluments arising from either method will be seen to be very considerable though more than double in favor of colonies: and when tenderness and compassion for these industrious little insects is put in the scale, no one surely will hesitate which mode to adopt.

The considerable profit, arising from the culture of Bees, I believe, greatly exceeds any other branch of agriculture; and it is rather to be wondered at that the keeping them has not been more universal. I know of none excepting this, that will return *cent. per cent.* for money expended, and which this on trial will be found to exceed. Here the proprietor wants not large extensive possessions; a small garden only will answer his purpose; and a little attention, at some particular seasons of the year, is all that is required.

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That colonies are preferable to any other mode of keeping Bees, is very obvious. Bees in single hives, all the breeding season, are distressed for want of room; most of the cells being then filled with the young brood, so that but little honey can be collected till very late in the summer, excepting just for their immediate supply. Whereas in colonies, by the continual addition of fresh boxes, their industry is excited, and all the Bees by that means are fully employed, which is much more agreeable to their nature.

Nor is it altogether the profits, though evidently so superior, that should induce us to preserve the lives of these little industrious laborers, and explode the common method of destroying them; but the honey this way will be taken in it's pure native state, unmixed with the offensive entrails of the young brood; which is impossible to be avoided with that which is produced in single hives.

The following calculation, of the expences for a house of twelve colonies, compared with those of twenty-four common hives, with the advantages and disadvantages of each method, will clearly show the superiority the one has to the other.

COLO-

COLONIES.

First expence of 12 Colonies.

	£.	s.	d.
The house, painting &c.	1	10	0
36 boxes, at 1s. each	1	16	0
12 swarms, 10s. 6d. each	6	6	0
	9	12	0

Average profit of Ditto.

Twelve colonies will produce in a moderate season 360 pounds weight of honey, with about 18. of wax. The annual profit will therefore be on an average as follows,

	s.	d.
360lb. of honey at 6d. p. lb.	9	0
18lb. of wax at 1s. 9d.	1	11
	10	11

Exclusive of the above, there remain the 12 original stocks, from which the colonies were produced: the succeeding annual profits of which will be half the sum above specified. For a fuller explanation of this, see the article of purchasing Bees.

Bees, kept in colonies, require no attendance, as they never swarm unless forced to it by not raising them.

In colonies they are entirely free from accidents of weather, vermin, &c. No mice can enter if made according to the preceding directions; and the boxes being so often changed prevents the moth (that most fatal enemy to Bees) from destroying them.

They are also more secure from bad seasons: as it must be the proprietor's own fault if he leaves not a sufficient quantity of honey, in the autumn, to guard against the chance of a backward spring*.

A little more than three yards square of ground will be sufficient for 12 Colonies, with scarce any trouble or attendance.

* See article for feeding Bees, and of ordering them in Spring and Autumn.

COMMON SINGLE HIVES.

First expence of 24 common hives.

	£.	s.	d.
24 swarms, at 10s. 6d. each	12	12	0
48 hives, at 10d. each	2	0	0
48 stands, at 1s. each	2	8	0
48 hackles, at 3d. each	0	12	0
	17	12	0

Average profit of Ditto

Twenty-four single hives, allowing 15 pounds weight of honey for each, will annually produce 360. Which is but just equal to that of 12 colonies

	£.	s.	d.
360lb. wt. of honey	9	0	0
18lb. of wax	1	11	6
	10	11	6

The above calculation is made in supposition that each hive annually produces one swarm, which on an average seldom happens.

Constant attendance is absolutely necessary all the swarming season, which in a large apiary will last more than three months, and often with the best attendance swarms are lost.

In the usual method, accidents of this sort are perpetually happening. They are often devoured by mice, or destroyed by the moth, &c. which last straw hives are more liable to than deal boxes.

Bees, kept in straw hives, often die for want, especially when a series of unfavorable weather hinders them from collecting from the early flowers.

Twenty-four hives, with all their swarms and casts, will require a considerable Garden. The comparative trouble and attendance of which I need not specify.

Of uniting Swarms.

The second or third swarms, commonly called casts, with the swarms of swarms, &c. all which usually happen in *July* or *August*, are seldom strong enough themselves to stand the succeeding winter. The only way therefore to preserve them is to unite two or three of these together, in the following manner.

If two or three of these should happen to come the same day, they then may be put altogether into one hive, without further trouble, and they will unite themselves. But if some time is elapsed between their swarming, it will be a matter of more difficulty if they are to be united in a common straw hive. The method is this; as soon as a swarm rises which is to be united with a former one, let it be hived in the usual manner, and brought in the evening where the first swarm is placed; which being done, spread a clean cloth smooth upon the ground, with a stick laid upon it for the hive to rest on, and also that the Bees may have sufficient room to go in and out of the hive: the Bees that are just hived must then be placed on this cloth, and giving the hive a smart stroke or two with the hand, they will all fall upon it; then throw the empty hive aside, and instantly place that which contains the former swarm over those on the cloth, and they will presently unite,
and

and become one family. After they are a little settled they must be placed again on the stand where the first hive was taken from. When Bees are to be united in boxes, they will be much easier managed ; it is done only by placing the last swarm over the first, and unstopping the communication hole between them.

Uniting swarms is also of great use when a hive has lost its queen : The best method to be used in that case is, to unite it with some weak stock, and thereby gain a double advantage, numbers to one, and a queen to the other. However, the way to manage this union must be different from the preceding, or the Bees removed will instantly fly to the place they were taken from, and most of them perish. I prefer Mr. Thorley's contrivance in this case to any other, and which is done by a stupefying fume, as follows. Be provided with a large *Fungus*, commonly known by the names of *Bunt*, *Burt*, *Frog-cheese*, *Mully-puffs*, *Puckfist*, or *Puff-balls* ; they are of various sizes, some nearly as big as a man's head ; when they are ripe, the inside begins to turn brown, and then they are fit to be gathered : put one of these into strong paper, and press it to near half its former size, by tying it very close ; then put it into an oven, after bread has been drawn, and let it remain all night ; when it will burn freely, it is dry enough to use. When any hives are to be united, cut off a piece of the dried *fungus*, as big as a *hen's egg*, and fix it on a stick at the bottom of an empty hive ; this must

be set on fire, and the hive, with the Bees in, placed over it ; in the space of a minute they will most of them fall into the empty hive. Proceed then, with the other hive of Bees in the same manner ; afterwards put them altogether into the hive it is designed they should remain in. When they are all in, cover it over with some coarse cloth that will admit the air, and let them remain shut up all that night and the next day. The second night, after their union in the dusk of the evening, let the cloth be just removed from the mouth of the hive, and the Bees will fly forth with a great noise, but being late they will soon return. They must be confined for three or four days more, first inserting two pieces of quills at the mouth, to let in the air ; afterwards they will be entirely reconciled, and the door may be left open. It must be observed, that the operation of the stupefying fume is to be performed with the utmost expedition, as the Bees will continue in that state but a very short time.



*Observations on purchasing Bees, in order to
stock the Colonies, and also of removing
Bees.*

The best and most proper time to purchase Bees is about *Christmas*; for by this means you gain a whole year. If you buy swarms in the summer, the price will be just the same, and you then run the risk of their not standing the succeeding winter. But if you purchase good and strong stocks in *December*, or the beginning of *January*, you not only furnish your boxes from your *own apiary*, but still remain proprietor of the old stock, which may annually supply you with fresh colonies.

The hives procured at this time should weigh at least twenty pounds, in order to produce strong and early swarms the succeeding springs; for on this circumstance greatly depends the success of your colonies. Swarms of the preceding summer are to be preferred to old hives; they are easily distinguished by the colour of the combs; these of the later sort are considerably darker than those of the former. Particular care should also be taken that they are free from moths and other insects, which so often prove destructive to Bees. Old stocks should be rejected for several reasons; they are not only more liable to be destroyed by the moth, and other vermin, than fresh swarms; but old combs, that have been often bred in, weigh heavier, and in

that respect are very deceitful to an inexperienced purchaser.

It is also very injudicious to remove Bees after the *beginning of January*; for if it should happen to be a mild forward season, and the Bees have had even one fine day to work in before their removal, it will so accustom them to their old situation, that many hundreds, insensible of any alteration, will naturally return loaded to the spot on which they formerly stood; and as these must unavoidably perish, it will greatly weaken the stock to which they belong. This never happens when Bees are removed in December, or the beginning of January; it being natural for them, before they resume their labours, early in the year, to catch the first favourable hour to reconnoitre their situation, and this manœuvre they never perform but once at the commencement of the season. The young ones also use the same precaution in their first flight: they do not eagerly sally forth to the fields, as the more experienced old ones, but first of all make several circles in the air, keeping their heads towards the hive.

Directions for feeding Bees, and ordering them in the Spring and Autumn.

At the end of *September*, about *Michaelmas*, when the honey-gathering season is over, the *Bee-garden* should be visited, and all the hives and colonies thoroughly inspected. All the single hives should weigh at least *twenty pounds*, and the colonies or boxes not less than *thirty*. Those stocks that are wanting of this weight must have a sufficient supply given them to make up the deficiency. Of less weight they seldom survive the winter, and if they do, are generally so weak in spring, that they are seldom afterwards of much service. This season also is the best time to feed them, as the honey is not yet candied by the cold, which, in that state, to Bees is certain destruction; give them therefore at this season as much as is necessary. The way to feed them is this; place them on an empty box, or flap-topped hive, into which put a shallow dish, or plate of honey, covered over with short straws; they will soon fall upon it, and carry it to their combs. This must be repeated till the hive is of its proper weight. No one need regret bestowing thus plentifully upon them, as they will always be repaid with interest; in short, without giving them a sufficient

ficient supply, the feeding them at all will be of little use.

I must observe, that the honey given to Bees should never be put on the outside, at the mouth or entrance of the hive, as it will not only draw others to them, but cause them to fight and destroy each other.

Notwithstanding what has been said above of feeding Bees, I would not recommend the practice but in case of necessity. Weak stocks are liable to many accidents which strong ones are free from; the best method of treatment, therefore, is to unite all the weak ones in *summer*, before the honey-gathering season is over; one strong hive being of more value than many weak ones.

Coarse brown sugar, moistened with *mild ale*, is a very good substitute to feed the Bees with instead of honey; and for my own part I generally prefer it; they are not only equally fond of it, but they feed upon it cleaner. Bees cannot be fed with honey without the loss of great numbers, unless it is given them in very small quantities at a time *.

The stands or boards, on which the hives or boxes rest, should now also be carefully examined, and all impurities brushed off. There will always be found some *embryos of Moths*, and other insects, deposited on the stands; which, if suffered to come

* A friend has suggested that if a pound of honey be diluted with a little warm water, and then poured into a dish or platter, and covered all over with bits of paper, pricked full of holes, they will feed as clean, and have a more natural food to deposit in their cells.

to perfection, will often destroy, and always greatly weaken the Bees the succeeding summer. The same attention is also to be observed at the end of *January*, or in the beginning of *February* at furthest.

Many people have recommended methods of keeping Bees particularly warm all the winter; but this is very injudicious. Keeping them very warm, makes them more active; consequently they will destroy more of their provisions; and it often entices them into the open air, to their utter destruction. Generally the more severe the winter, the better it is for the Bees; and the only care necessary at this season is, to keep them dry, and free from rains and wind.

In the *autumn*, or when the honey-gathering season is partly at an end, the mouth or entrance of each hive and colony should be contracted one half, or less. In this situation the Bees will be much better able to defend themselves against their enemies of every kind; but particularly from *Wasps*, and the *robberies* of other Bees, at this season often very troublesome.

Of Enemies to Bees.

Bees have many enemies, which should have as little access to the *apiary* as possible. *Sparrows*, *Swallows*, and *Robin Redbreasts*, but particularly the first, are very destructive to Bees; their *nests* therefore

therefore ought to be destroyed with all diligence. *Ducks* also devour great quantities from off the flowers.

The *Mouse* is a very dangerous enemy, especially in the winter, and will destroy a hive of Bees in a little time: from this disaster Bees kept in boxes are perfectly secure; the entrance, being only half an inch in height, is too low to admit them.

Wasps and *Hornets* are very hurtful towards the end of summer: *Hornets* prey upon the Bees themselves, and the *Wasps* rob them of their honey. In some years, when there are great plenty of *Wasps*, the *weak stocks* are in danger of being totally destroyed, unless some precautions are used to prevent their depredations. The best time to get rid of these fierce insects is in *April* or *May*; in every wasp then killed, you destroy a whole nest; these are the mothers which alone survive the winter, and are the only breeders. In summer the nest should be sought for and destroyed, which may be done by burning brimstone in the holes where their combs are formed, or wet gun-powder; afterwards let them be dug up and buried, or they will presently recover from their suffocation.

The *Moth* is another very formidable enemy to the *apiary*; too great care cannot be used to be free from this insect. Bees are oftener destroyed, and suffer more from this enemy than all the rest: and if there are many that have got into a hive, it is impossible to save it. The best precaution to be used is frequently, both in the *spring*
and

and *autumn*, to brush off all the filth that may have fallen on their stands, and often examine the edges of the hives, and clear off any of their webs that may adhere to them. Deal boxes have greatly the advantage of straw hives in this respect; the boxes being so often changed, that the moth has no time to harbor in them; neither are they so subject to the moth as straw hives are.

Earwigs and *Woodlice* are also great plunderers of the apiary, and should often be sought for and destroyed. For this reason the hives and houses should be frequently examined, and the stands brushed, and kept as neat and clean as possible: otherwise the crumbs of wax, dead Bees, and other filth falling down, will afford so much harbor for all kinds of vermin, that it may prove destructive to the strongest hives and colonies.

Bees are often *great enemies* to each other, and furious battles are sometimes fought, when they want to rob one another of their honey. These battles are seldom, if ever, with Bees of the *same apiary*, nor do they ever happen in good honey-gathering years; it is generally in bad seasons that they become thus furious, when they find they have not a sufficient supply for the approaching winter. In order to remedy this evil, when these attacks are perceived, the entrance of each hive and colony should be nearly closed, all but a small space that will admit only the passing of one Bee at a time: they will defend this narrow passage with much greater ease than

than a larger entrance. When these battles commence, they are easily known by the number of dead Bees that lie under the hive; and it is wonderful with what fury they persevere in their attacks to a hive into which any of the robbers have once gained an entrance. I must observe that commonly the weakest stocks are subject to these encroachments; and this is a strong argument for uniting all hives of this class.

Of separating the honey and wax.

Take the boxes, or hives, into a close room, secure from the access of Bees, or they will be found very troublesome during the operation. As the combs are taken out, the top of the cells on each side must be pared off; this is to give the honey a free passage through the sieves, into which they must be laid*, and there left to drain into large glazed stone pans. Whilst the honey is running, it will be proper to burn some live coals of charcoal in the same room, to warm the air, which will cause it to run the freer and quicker from the cells; at the same time care is to be taken that no smoke is made, which would give the honey an ill flavor. The honey thus obtained, without be-

* Large wire sieves are best at first; afterwards let the honey be drained through common hair-sieves.

ing pressed, or squeezed from the combs, is the best and purest.

The honey which still remains in the combs will be of an inferior sort, as it will not be gotten without some impurities. If it is washed out for the purpose of making mead, it will be equally as good for that use as the best ; as the crude wax, &c. always separates in the fermentation.

After the honey is entirely separated from the combs, in order to obtain the wax in a pure state, they must be boiled pretty much in a copper of water, often stirring them whilst they are over the fire. When the combs are sufficiently boiled, they must be put into a strong canvass bag, and the wax pressed out into a vessel of water.

The usual method of doing this is to suspend a three-cornered canvass bag over a vessel of clean water ; which bag being filled with the combs well boiled, the wax is pressed out by two people, each holding the ends of a couple of smooth sticks ; which being often passed, and with some force, down each side of the bag, separates the wax very perfectly, which falls into the water underneath. When all the wax is separated from the dregs, it must afterwards be taken from the water, and again melted over the fire, and all the scum carefully taken. It off must then be poured into vessels in order to form it into cakes, previously putting into them a little water, to drain off any impurities that may yet remain in the wax. The larger the cakes of wax are, the better and more valuable they will be.

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The above method is the usual way of ordering the combs, excepting in large apiaries, where presses are sometimes made use of; which for great quantities are more expeditious.

There is a much easier process, and which I have often practised, for procuring the wax from those combs which have never been bred in *. The manner of doing it is thus. Separate, in the first place, all the combs that have never been bred in; they are easily distinguished from the others, being thinner, lighter, and not of so dark a colour. To mix in the rest will be of little use, as they yield little and often no wax. When all the best combs, and parts of combs, are separated from the others, let them be put into a boiler, and pressed close down, in order to give them the more room; then let them be covered with water, and kept boiling for the space of ten minutes; during the boiling they must be kept constantly stirred, and when cold all the wax will be found in a hard cake on the surface. As there will be a quantity of dross adhere to the bottom of the wax, let it be pared off with a knife; and let the wax be again melted in a smaller vessel, without water, and the scum taken clean off. Afterwards let it be poured into a tin or earthen vessel, with a little water at the bottom, to form into cakes for sale. In order to

* Mr. Keys, in a late ingenious treatise, has recommended a process somewhat similar to this, but with the addition of aquafortis. What use the aquafortis is of, I have not been able to discover. And probably Mr. Keys never tried it without.

obtain the little wax contained in the refuse combs, they must be boiled, and pressed in the canvas bag, as given in the directions above.

Of Mead, and Wines to be made with Honey.

Mead, or *Hydromel*, is a strong luscious wine, made with honey and water; the goodness and strength of which entirely depends on a due *mixture* and *fermentation*. When properly made, it is stronger than most other wines, and will soon intoxicate. Though it is a liquor at present not in great repute, yet it soon may become so by a little attention in making it. In order to obtain this desirable end, and to make this cheap and wholesome liquor pleasing to the taste, has induced me to attempt several experiments, which have employed my attention for several years. How far my inquiries have succeeded, will be found by the subsequent plain, easy, and simple methods.

To make Mead.

Mix honey with clear soft water till it will just bear a new egg, that is, till the surfaces of the egg and water meet only: For as the honey got from different situations often differs essentially in goodness; this, therefore, is the best method I can suggest for ascertaining the just quantities. To

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imagine.

imagine the Mead will be stronger by allowing more honey, as some practise, even till part of the egg rises considerably above the surface of the water, is very erroneous; it will neither be so strong or palatable. A proper mixture being ascertained, let it be put over a fire, when some attention will be necessary in taking off the scum as it arises, both before and after it boils *. As soon as the scum is taken off, it must be immediately taken from the fire, and poured into the cooler. If a fermentation does not commence the next day, it may be hastened by putting in a little good yeast, *perfectly free from any ill flavor*. It may be left to ferment in the cooler about ten or twelve hours, and then put into barrels; the barrels must be filled within about two inches of the top; whilst the liquor is fermenting, the bung-hole must not be stopped up, but only covered with thin paper, cloth, &c. in order to keep out the dust, and at the same time admit the external air. As the liquor gets lower in the cask, it must often be refilled †, whilst the fermentation lasts: For if it gets too low to work through the vent hole, the foulness will sink for want of passage, and thereby muddy the wine. When the working is ceased, the casks

* It must be observed, that the less the liquor boils the better, and that need only be till the scum is taken off. The more it is boiled, the worse it ferments. A very little boiling is necessary to separate the impurities; when that is obtained, it should be immediately stopped.

† This filling should be renewed as often as necessary, till the fermentation has entirely ceased; at the same time great care should be taken not to break the scum at top, or as little as possible, lest it cause the Mead to be foul and ill tasted.

may then be stopped close down ; though it will be necessary to open a vent hole whenever it is perceived to ferment again, and which often happens.

The usual time of making Mead is the latter end of *September*, or the beginning of *October*, soon after the honey is taken from the *Apiary* ; and this season is to be preferred, as the weather is seldom either very hot or cold, consequently more favourable to fermentation. When Mead is made therefore at this time, in the *March* following it should be racked from the lees into a fresh cask, scented with the *prepared match* *. And if it is not perfectly fine from the first racking †, the operation should be repeated every month or two afterwards till it becomes so. In doing this, dry calm days should be chosen, never rainy or windy ones, as all new wines at those times are apt to fret, and be in a sort of fermentation, and consequently foul. When perfectly fine, it may be bottled off.

The way to promote, or check fermentation.

Mead, and all fermented liquors, requires a due degree of fermentation ; too much or too little is equally pernicious. If it is not fermented enough, it never arrives at the *vinous* quality, will not get fine, but becomes weak, and mere stum. If, on the contrary, it is fermented too much, it then

* See the method of scenting casks with the match.

† That is, in five or six weeks after the first racking.

surpasses the *vinous*, and tends to *acid*. Those who superintend the making of Mead, should frequently taste it whilst it is working. By this means they will soon acquire a certain knowledge (and which can only be obtained by experience), when the liquor has arrived at the *desirable vinous medium*, after which it ought not to ferment.

As *Mead* is a liquor that requires much fermentation, though not a violent one; the following particulars may therefore be used as occasion requires.

In order to *promote* the fermentation, the liquor must not by any means be *shook*, or put into the least motion. It must also have free *admission* of the *external air*, and be kept in a moderate degree of warmth.

To *check* or *kindle* a violent fermentation, you need only *burn* a little *sulphur* near the vessel, and it will immediately restrain its fury.

A *new cask* checks the fermentation of any liquor, and renders it weak and spiritless. No vessel therefore should be made use of for wine but what has been well seasoned, or the liquor will be *flat* and *vapid*.

The method of scenting casks with the match.

To one spoonful of *brandy*, add an ounce of *sulphur*, with a quarter of an ounce of *burnt allum*; put them together in an earthen pan, and melt them

them over a clear fire. Into these melted ingredients dip some slips of *canvas*, or other coarse *linen*; and immediately on their being taken out, sprinkle over them the powders of *nutmegs*, *cloves*, *coriander*, and *aniseeds*, which must be prepared in readiness.

This *match* is afterwards burnt at the *bunghole*, so as the fumes may be received into the *cask*. All vessels used for any sort of wine should be scented as above.

To give Mead the flavor of Rhenish Wine.

In the first place mix water and the juice of ripe grapes in equal quantities; and to every gallon of the above mixture, add two pounds of honey. In order to give the flavor, make a decoction of *Clary-seeds*, or *Galitricum*; more or less, according to the degree of taste it is meant the wine should imbibe. The decoction is made by boiling and steeping the ingredients with some of the liquor; when it becomes cold, it is to be mixed with the wine in the vat, after the *fermentation is begun* *.

The fermentation, &c. is to be managed according to the directions given in the article for making Mead; excepting this only, that the above

* When a flavor is to be communicated to wine, &c. the time to obtain the end most effectually is just at the beginning of the fermentation; every thing then added will communicate its taste in a very powerful manner, which, put in after the fermentation is over, would be imperceptible.

mixture is not to be boiled. Nor should any liquor be boiled, for the purpose of making wine, when the expressed juices of fruits make a part of the composition.

To give Mead the flavor of Frontiniac.

Proceed as with the above directions; only instead of the decoction of *Clary-seed*, or *Galitricum*, use distilled *Elder-flower-water*, or a decoction of preserved *Elder-flowers* *.

To give Mead an agreeable roughness.

Let the water used be strongly saturated with the juice of ripe *Sloes*, which may be done by boiling them in it. Mix this water when cold with an equal quantity of the juice of ripe *Grapes* †; and to every gallon of this mixture, add two pounds of honey. The fermentation to be managed as the articles above.

To give Mead the flavor of Raspberries, Currants, &c. &c.

Prepare the liquor by boiling, as in the directions given for making common Mead, with the same proportions of honey and water. When it is cool in

* See article of collecting and preserving herbs, flowers, and fruits, &c.

† That called the Claret Grape is to be preferred.

the vat, and the fermentation just commenced, then put in the fruit, &c. more or less, according to the degree of taste it is to receive. Let the fruit, or other flavourable ingredient, be mixed with part of the liquor, and passed into the vat through a sieve. The fruit, &c. is to be previously prepared *.

To tincture Mead of a fine red colour.

Take of the *Grape*, well known in England by the name of *Claret Grape* †; they are of a fine blue colour, with a flue over them like plumbs. Let these be pulled from the stalk, and mashed with the hands, when, after they have remained together with the husks for several days, or about a week, the liquor will have acquired a deep purple colour, which is to be mixed with the Mead in the vat before the fermentation begins, the juice being first of all pressed from the husk.

Another way is to take some Turnsole, and steep it a night in some of the liquor; and having strained the infusion through a bag, the tincture is to be mixed in the vat; or the juice of full ripe Elderberries will give a fine claret colour, at the same time it will communicate somewhat of its taste.

* See the article of preserving herbs, fruits, &c.

† Grapes, and all other fruit used for wines, ought to be perfectly ripe, as the juice of unripe fruits will hardly ever ferment at all; it will also cause the wine to be rough and acid.

To cure Mead when it is foul or ropy.

Take *Spirit of Wine*, about the quantity of a pint to a hoghead, and it will refine it effectually and speedily. This method is not to be used if the wine is at all sharp or eager.

Another method is to put into the vessel some powder of *burnt Allum*, *Lime*, or *Chalk*. Afterwards rack it off into a cask well scented. See the way of scenting casks.

Also a *Lee* of the *ashes* of *Vine Branches*, or *Oak*; the proportion of a pint to a hoghead, being mixed with wine, infallibly cures the ropiness of it.

To recover Mead when it is flat, or fretting.

When *Wines* become flat, they are recovered with the *Spirit of Wine*, together with a few *Raisins* and *Sugar*, or *Honey* and *Raisins*; these ingredients soon render them brisk and sparkling, and give them spirits.

Fretting Wines may be cured by putting in a bit of raw beef, for them to feed upon.

Further



Further Remarks on the making of Mead, &c.

Wines made with honey, or with honey and the juices of fruits, are much superior to those made with sugar; being both of a higher and more vinous flavor, and also more agreeable to the stomach. *Common Mead* when badly made, as it generally is, has but few admirers; but when made with care, and a due fermentation ascertained, it then becomes a most pleasing, agreeable, wholesome liquor, equal to the best of foreign wines, and perfectly inoffensive to the most delicate constitution.

In order to obtain Mead (or indeed any other fermented liquor) in any degree of perfection, great attention must be observed in the making of it. A just proportion of honey and water is absolutely necessary; too much or too little is equally pernicious. The method recommended of ascertaining the proportions by a new egg, is preferable to the doing it by weight or measure; as the honey in this climate is much better one year than it is another. The wet and cold summers never produce it of that superior quality we have it in hot and dry seasons. When a just proportion of honey and water is procured, the next and chief business is to give it a proper *fermentation*; and on this partly depends the goodness or badness of every fermented liquor.

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I have recommended to procure a ferment with a little yeast, in case the liquor should not work without; at the same time, if it will ferment without, it is better that it should. If yeast is used, great care should be taken that it is of the best quality, and perfectly free from any ill flavor, or it will be communicated to the wine. Mead, made with the mixture of the juices of ripe fruits, will always ferment of itself, if the fruit is perfectly ripe; and no other should ever be used on any consideration whatever.

Common Mead, or that whose composition consists only of honey and water, will seldom ferment too much; and rather requires aid to assist the fermentation, than any thing done to restrain or retard it. On the contrary, when the juices of fruits compose a part, care must then be taken lest the wine ferment too violently, thereby exhaust too much of its spirit, and become eager and acid.

When the *juice of Grapes* is mixed with the Mead, the liquor is to be fermented without boiling: but when only the flavor of any *fruit, flower, &c.* is required, as *Rasberries, Currants, Elder Flowers, &c.* such ingredients are not to be mixed with the liquor, till after the honey and the water is boiled, and the fermentation begun, according to the directions given for *making common Mead*. And it must be observed, that when the flavor only of any *Fruit, Flower, or Herb, &c.* is wanted to be given to Mead, the ingredient, which is to communicate the flavor, is never to be mixed with the liquor till
after

after the ferment is begun, or the effect will be entirely lost, or so faintly given as to be hardly perceptible.

Whilst the Mead ferments, and decreases in quantity, the vessel must often be refilled with liquor from the vat, in order that the ferment may pass through the vent hole; for if the liquor be too low in the vessel to admit the ferment to pass off, it will cause it to be foul, ill-tasted, and tending to acid. And for the same reason, when these refillings become necessary, let them be done with particular care, lest any part of the scum at top fall down, and mix with the Mead, by being too much broken and disturbed.

Mead should never stand upon the Lees longer than six months at most; and then should be racked off into an empty vessel, scented with the match. If it does not become fine after the first racking, the operation should be repeated as often as necessary; that is, every month or two, after the first racking, till it becomes fine. Drawing wines often from the lees, causes them to be brisk, lively, and sparkling in the glass; whereas, if they remain on the dregs, they become thick, dull, and often ropy.

*The method of collecting and preserving Herbs,
Flowers, and Fruits, to be used in Mead.*

All *Vegetables*, wanted for this purpose, ought to be gathered in a warm day, without wet, and
dried

dried immediately by the *fire*, never by the *sun*, however hot. The *colours* of *Herbs* and *Flowers* are for the most part changed or destroyed in drying them by the sun's *beams*, or in the *shade* without *fire*; but, when dried by the *fire*, equal to the heat of the *sun* in *summer*, it does not injure them in the least, but on the contrary preserves the liveliness of their *colour*, *smell*, and *taste*, more perfectly than by any other method. When perfectly dry, they should be preserved so till wanted in tin *cannisters*, *bottles*, &c. Their *flavors*, when wanted to be communicated to Mead, must be extracted by *decoction*; that is, by boiling some of the liquor, and pouring upon them; when it is cold, it is fit for use.

All *leaves* of *Vegetables* are in their greatest perfection when at their full growth, and should be collected just before their *flowers* appear. *Flowers* are so when in *full bloom*.

As the season when *Rasberries*, *Currants*, &c. are ripe, not being so favourable to the making *Wines*, as later in the *summer*; therefore, when the *flavors* of such *fruits* are wanted, which are of so corruptible a nature, they may be preserved some months by being beaten with about twice their weight of fine sugar, and kept in a close *vessel* till wanted; when used, the less quantity of honey will serve. These fruits are to be gathered without the least wet.



Various Experiments, of Use and Curiosity.

How to be supplied with fresh Honey all the Summer.

Put a strong swarm of Bees into a large flat-topped hive, or box, that will hold about half a bushel, to prevent their swarming too often, and which must be placed under cover. On the top of this hive there must be previously cut three or four small round holes, of about an inch in bigness; over which place as many little *glass-hives*, each of them large enough to hold about a quart in measure; these *glass-hives* must be covered, to prevent the light, otherwise the Bees will never work in them. As the Bees will not breed in these small hives, they will therefore be constantly filled with clear unmixed *Virgin Honey*, as often as they are removed; and which may be taken at any time of the day, without the least difficulty, at the same time always replacing another glass *.

The small *glass-hives*, or *cups*, may be of any form the proprietor pleases; but those made in the shape of a *Bell* will be found most convenient to

* It must be observed, that no honey should ever be taken from Bees after the first week in August, or there will not be sufficient left to keep them the following winter. The honey taken by this method is the purest that can possibly be obtained.

take the *combs* from. There should be a small hole in the top of each glass, in order to admit a round stick the whole length of it, to which the Bees may fix their combs. If the Bees should not readily take to build in these glasses, in that case place in them a piece of new or virgin comb, as the most likely means to entice them.

To give to Honey some particular flavors.

Place some *Orange Trees* in bloom, near your Bees, or plant a few square yards of *Mignonette*, *Thyme*, or other *aromatic Herbs*, and your honey will contract the flavor of such plants or trees, and acquire a taste like that brought from the *Mediterranean*.

A Way to whiten Honey.

Spread honey about two inches thick on a tin vessel, and expose it to a severe frost, in the open air; turning it several times as the top gets white; and it will in a few days acquire a much whiter appearance.

A Method to increase Colonies without letting the Bees swarm.

Be provided with two of my boxes, made with the addition of holes of communication through
one

one side of each box. The side holes must be furnished with sliders, to open or close the passages as occasion requires. Into one of these boxes put a forward swarm, and place it close by the side of the other empty one; at the same time drawing back the sliders, in order to give the Bees a free passage into each box; for the side holes must be cut so as exactly to correspond with each other. In three or four weeks, both these boxes (if the season be favourable, and the swarm a good one) will be filled with combs, &c. As soon as this is perceived, let the sliders be closed, and let each box have an empty one immediately put under it, in the same place they were before; thus they will become two distinct colonies *. It sometimes happens indeed, though very seldom, that one of the boxes shall have no queen; in that case, unless the Bees in it can be furnished with one, they will immediately assemble to that in which she resides. But as the operation of furnishing them with another Queen may be thought too troublesome and difficult for general practice (though trifling to those who are accustomed to them); I would therefore advise, when this happens, either again to open the sliders, as before, a little longer, or to place the box which has no Queen in it, under that which has one, and so let them remain as one colony; for probably no Queen may be bred, especially if it is late in the season, before the boxes are separated.

* This process proves beyond a doubt that more than one Queen will live in the same colony, when there is sufficient room.

It is to be observed, that the mouth or entrance of each box must be left open from the beginning.

To cause Bees to attach themselves to any Person, Place, &c.

First learn readily to distinguish the *Queen* or *Mother Bee*, which knowledge may soon be attained, by attentively examining *swarms* and *hives* of *Bees* when destroyed, &c. When a hive is turned up (in order to secure the *Queen*), she is generally one of the first that appears in sight, but must immediately be seized, or she soon disappears. Her Majesty is no sooner secured, but the other *Bees* will instantly follow in great crowds; and wherever she is placed, there the rest will immediately attach themselves, to the great surprise of those who are ignorant of the cause. To be able to distinguish a *Queen Bee*, is useful when a hive has lost its *Queen*, and you wish to re-place it from one of those that may happen to have two or more. *Bees* seldom sting whilst you are in possession of their *Queen*.

An effectual Method of curing the Stings of Bees and Wasps.

The *Sting* of a *Bee* is generally more virulent than that of a *Wasp*, and with some people attended with very violent effects. The sting
of

of a Bee is barbed at the end, and consequently always left in the wound; that of a Wasp is pointed only, so that they can sting more than once, which a Bee cannot do.

When any person is stung by a Bee, let the sting in the first place be instantly pulled out, for the longer it remains in the wound, the deeper it will pierce, owing to its peculiar form, and emit more of the poison; the sting is hollow, and the poison flows through it, which is the sole cause of the pain and inflammation. The pulling out of the sting should be done carefully, and with a steady hand, for if any part of it breaks in, all remedies then, in a great measure, will be ineffectual. When the sting is extracted, suck the wounded part, if possible, and very little inflammation, if any, will ensue. If hartshorn drops are immediately afterwards rubbed on the part, the cure will be more complete.

All notions of the efficacy of sweet oil, bruised parsley, burnett, tobacco, &c. appear to me, on various trials, to be totally imaginary. On some people the stings of Bees and Wasps have no effect: it is therefore of little consequence what remedy they may apply to the wound. However, the effect of stings greatly depends on the habit of body a person is of; at one time a sting shall take little or no effect, though no remedy is used, which at another time will be very virulent on the same person.

To whiten Wax.

After the wax is well separated from the combs, and cleared of all the dross and scum (in order to whiten or blanch it), it must be again melted, and formed into very thin cakes: these are to be exposed in the open air, till they become white; and turned every night and morning, having equal need of the sun and dew. When the outsides of these cakes become tolerably white, they must be melted over again; and the same process is to be repeated till they become of the whiteness required.

The best Way to keep Honey.

Honey often proves prejudicial to delicate constitutions, from a cause which few people attend to, or even suspect; I mean the method in which it is usually kept. When honey is preserved for any length of time in common glazed earthenware, it dissolves the lead with which the ware is glazed, and becomes very unwholesome, by mixing with its noxious quality. Honey, therefore, and all acid and saline substances, should always be kept in glass, china, or common stone pots, or jars, which are glazed with salt.



A D V E R T I S E M E N T.

THE Candid Reader, it is hoped, will excuse some Inaccuracies of Expression, as well as Typographical Errors in the following Treatise, when he is informed that the Author, (who resided in the Country) after committing his Observations and Directions to paper, was suddenly called away to attend a sick Friend to Italy, before he had time to revise the Style, much less to correct the Press; and that the Publisher was unwilling, for the Sake of meer Literary Composition, to detain these useful and curious Precepts from the Public: Who are therefore respectfully desired, in the Author's Absence, to make the following Corrections of some of the

E R R A T A, &c.

Page viii. line 11. for than, read to.

- | | |
|--------------|--|
| ix. | 10. <i>dele it</i> |
| 12. | 18. <i>for admirable, read admirably.</i> |
| 25. note † | <i>read nearly half the expence.</i> |
| 26. line 15. | <i>read these Alighting-Boards.</i> |
| 34. | 17. <i>for entrails, read excrements.</i> |
| 44. | 28. <i>read, this Insect.</i> |
| 47. | 27. <i>read taken off. It must</i> |
| 51. | 21. <i>for requires, read require</i> |
| 52. | 10. <i>for used, read attended to</i> |
| 60. | 21. <i>for not being, read is not</i> |
| 65. | 22. <i>for imaginary, read groundless.</i> |

H A C T E N U S.

ADVERTISEMENT

THE Candidate Reader, it is hoped, will excuse some inaccuracies of Expression, as well as Typographical Errors in the following Treatise, when he is informed that the Author, (who resided in the County) after committing his Observations and Reflections to paper, was suddenly called away to attend a sick Friend to Italy; before he had time to revise the style, much less to correct the errors; and that the Publisher was unwilling, for the sake of meeting Literary Compulsion, to detain these useful and curious Remarks from the Public; Who are therefore respectfully desired, in the Author's Absence, to make the following Corrections of some of the

ERRATA

- Page 11. line 1. For "that" read "to".
 12. "to" read "it".
 13. "for" read "admirable", read admirably.
 14. "not" read "and nearly half the expense".
 15. "the" read "their" (lightning-bolts).
 16. "the" read "the animals", read experiments.
 17. "the" read "the light".
 18. "the" read "the light".
 19. "the" read "the light", read "the light".
 20. "the" read "the light", read "the light".
 21. "the" read "the light", read "the light".
 22. "the" read "the light", read "the light".

HACTHUS



